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HENSOLDT'S COMPLETE SPECIFICATION. (1 SHEET)

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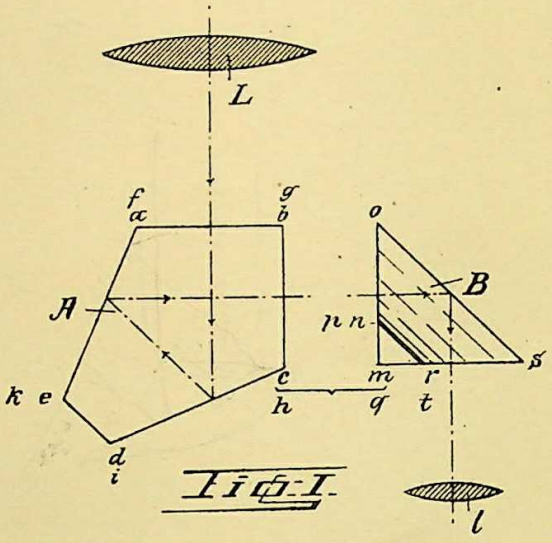



Fig. I.

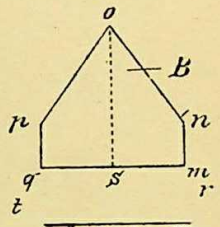



Fig. II.

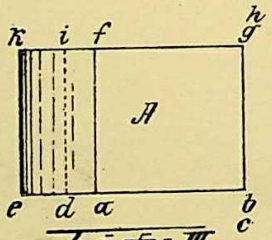



Fig. III.

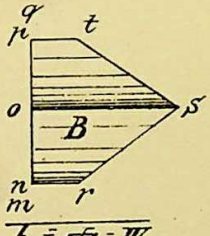



Fig. IV.

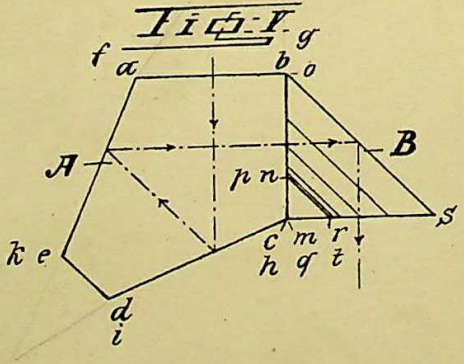
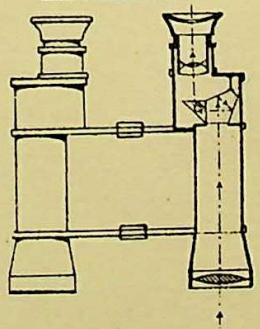



Fig. V.

Fig. VI.



[This Drawing is a reproduction of the Original on a reduced scale.]

See (Fr) 687,010 88/33

Malby & Sons, Photo-Litho

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# N° 15,806 A.D. 1898

Date of Application, 19th July, 1898—Accepted, 3rd Sept., 1898

DUPLICATE

COMPLETE SPECIFICATION.

## A New or Improved Prismatic Telescope or Field Glass.

I, MORITZ HENSOLDT, of Wetzlar, (Germany), Optician, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement;—

This invention relates to an improved prismatic telescope, which can be formed as a monocular or as a binocular telescope.

Fig. 1 shows a diagram of such a telescope, L is the objective, *l* the eye lens and A B are two prisms, which can be made separate or united as shown in Fig. V, at their corresponding surfaces by means of a transparent cement. Fig. 2 is a side view of the prism B. Fig. 3 is a plan view of the prism A. Fig. 4 is a plan view of the prism B. Fig. 5 is a side view of the prisms A & B connected together. Fig. 6 shows the total arrangement of the telescope in section for a binocular telescope.

The instrument consists of a light collecting objective, a magnifying astronomical eye lens in connection with a prismatic system for shortening the distance between the eye piece and the objective and restoring or reinverting the inverted image from the objective.

The prism system consists of two single prisms A, B (Fig. 1) either separated from one another or connected with one another, of which the prism A is provided with an even number of reflecting surfaces in the present case two surfaces *d c h i* and *e a f k*. These two surfaces cause a deviation of the light axis from its direction and this deviation is corrected by a second prism B, which is simultaneously a deviating and inverting prism, so that the axial ray passing through the objective, on the first prism leaves parallel to this direction from the second prism B and gives simultaneously an image which with an astronomical eye lens gives a picture similar to the original, that is to say, standing upright and not with reversed sides.

The prism A has two reflecting surfaces *c h i d* and *a f k e*, whilst the surfaces *a b g f* and *b c h g* are incident surfaces. These two incident surfaces are inclined to one another at a right angle and are met and left by the axis ray in the direction of the axis of incidence so that the ray passes unbroken from the prism. The two reflecting surfaces *c h i d* and *a f k e* are inclined to one another at an angle of $22\frac{1}{2}$ degrees and symmetrically to the passage of the rays.

From the known property of an angular mirror, the reflecting surfaces of which stand at right angles to one another, it results that one sees the picture of the objective in the first mirror through the second one and the picture of the objective in the second mirror through the first one the picture being inverted. In order that the two pictures appear as a single uninterrupted picture, it is necessary to keep a right angle with great precision.

The prism B is represented in Figs. 2 and 4 in a side view and in plan view and is formed essentially by four planes consisting of two pairs, one member of which is perpendicular to the other the meeting edge of one pair being turned through 90° with regard to the meeting edge of the other pair. These planes are *m n o p q*;

[*Price* 8*d*.]

*m r s t q*; *n o s r*; and *p o s t*. These two last planes *n o s r* and *p o s t* form surfaces for totally reflecting the axis ray and the same is not broken by the incident surfaces *m n o p q* and *m r s t q*, as the axial ray enters and leaves the prism B again in a perpendicular direction. The path of the ray is indicated by the direction of the arrow. The ray enters through the objective L into the prism A, is reflected by the mirror surface *c h i d* to the mirror surface *a f k e* and leaves through the surface *b g h c* from the prism A, enters then into the prism B and leaves the same through the surface *m r s t q* without undergoing any refraction on the transparent surfaces of this prism and passes to the eye lens parallel to the ray from the objective. Fig. 6 gives a picture of a double telescope constructed in this manner and its combination shown in the diagram.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed I declare that what I claim is;—

An improved prism telescope having two prisms arranged separately or unitedly in such a manner, that the one of these prisms A by means of two reflecting surfaces *c h i d* and *a f k e* causes a deviation of the axis ray from its direction and the other prism B by total reflection of two surfaces *n o r s* and *p o s t* inclined at right angles against one another and adjoining one another causes the ray to leave in a line parallel to its entrance with simultaneous inversion of the picture.

Dated this 19th day of July 1898.

HERBERT HADDAN & Co.,
Agents to Applicant, 18, Buckingham Street, Strand, London.

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